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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,025	09/23/2005	Seiji Tanimoto	277030US0PCT	7360

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ALEXANDRIA, VA 22314

EXAMINER
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BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1762

NOTIFICATION DATE	DELIVERY MODE
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02/02/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/550,025	<b>Applicant(s)</b> TANIMOTO ET AL.	
	<b>Examiner</b> MICHAEL M. BERNSHTEYN	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5,13-27,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,13-27,29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office Action follows a response filed on December 29, 2010. Claims 1, 14, 15 and 26 have been amended; claim 28 has been cancelled; claims 29 and 30 have been added.
2. In view of the amendment(s) and remarks the rejection of claim 28 under 35 U.S.C. 112, first paragraph, the rejection of claims 1-28 under 35 U.S.C. 112, second paragraph, and the rejections of claims 1-5 and 13-28 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kim et al. "Poly(vinyl alcohol) Stabilization of Acrylic Emulsion Polymers Using the Miniemulsion Approach", *Macromolecules*, 2003; **36** (15), p. 5573-5579), and under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al. (JP 2002-308939 A) have been withdrawn.
3. Applicant's arguments with respect to claims 1-5 and 13-27 have been considered but are moot in view of the new ground(s) of rejection.
4. Claims 1-5, 13-27, 29 and 30 are pending.

### ***Claim Rejections - 35 USC § 103***

5. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.
6. Claims 1-5, 13-27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Poly(vinyl alcohol) Stabilization of Acrylic Emulsion Polymers Using the Miniemulsion Approach", *Macromolecules*, **2003**; 36 (15), p. 5573-5579) in view of Tanimoto et al. (U. S. Patent 6,495,623).

With regard to the limitations of claims 1-5, 13 and 26, Kim discloses a (meth)acrylic resin emulsion and a method for producing of (meth)acrylic resin emulsion. The emulsion consists of n-butyl acrylate and methyl methacrylate (50/50 wt%) employing poly(vinyl alcohol) (PVA) as a stabilizer and hexadecane (HD) as a costabilizer (abstract).

The obtained poly(vinyl alcohol) (PVA) has a degree of hydrolysis (DH) (or a degree of saponification) 87-89%, and a degree of polymerization (DP = 500), which are clearly within the claimed ranges (p. 5574, the right column, Experimental Section).

With regard to the limitations of claims 1, 4 and 5, Kim does not disclose that the vinyl alcohol polymer comprises from 1.9 mol% to 4.0 mol% of a 1,2- glycol bond.

Tanimoto discloses that preferably, the 1,2-glycol bond content of the polyvinyl alcohol is at most 4 mol %, more preferably at most 3.5 mol %, most preferably at most 3.2 mol %. The 1,2-glycol bond content of the polyvinyl alcohol can be obtained through NMR spectrometry of the polymer, which is exactly within the claimed range (col. 5, lines 1-4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the 1,2-glycol bond content of the polyvinyl alcohol within the claimed ranges, as taught by Tanimoto in Kim's (meth) acrylic resin emulsion in order to achieve a good control of the properties because if the 1,2-glycol bond content of the polyvinyl alcohol is smaller than 1.9 mol %, the aqueous emulsion containing it will be poorly resistant to water, and if so, in addition, the emulsion viscosity will much depends on ambient temperatures and the polymerization stability in

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producing the emulsion will be poor (col. 4. line 63 through col. 5, line 1), and thus to arrive at the subject matter of instant claims 1, 4 and 5.

With regard to that said emulsion has a "factor a" of at least 0.3 that indicates the particle size distribution width of the emulsion and of which a film formed at 20 °C and 65 % RH to have a thickness of 500  $\mu\text{m}$  has a tensile strength of from 100  $\text{kg}/\text{cm}^2$  to 300  $\text{kg}/\text{cm}^2$  and that a dissolution of said film is at most 10% when dipped in an aqueous 1 N sodium hydroxide solution at 20 °C for 24 hours instantly claimed in claims 1 and 26, the combined teaching of Kim and Tanimoto is silent about it. However, in view of substantially identical composition for (meth)acrylic resin emulsion (the same ingredients of n-butyl acrylate and methyl methacrylate, their weight ratio; the degree of hydrolysis (saponification) and the degree of polymerization of PVA) between Kim and Tanimoto and instant claims, it is the Examiner's position that Kim and Tanimoto's composition for (meth)acrylic resin emulsion possesses these properties. Since the USPTO does not have equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise. **In re Best** 195 USPQ 430, (CCPA 1977).

With regard to the limitations of claims 14-24, Kim discloses a method for producing a (meth) acrylic resin emulsion. The recipe used to prepare the various miniemulsions comprising several different formulation components is shown in Table 1. PVA was dissolved by heating at 90 °C for 3 h in deionized water (ca. 6 wt %), and the solution was filtered using a 200 mesh screen. The solids content of the PVA solution was determined gravimetrically and adjusted to 5.9 wt % by adding deionized water.

*Miniemulsions stabilized with HD.* A specific amount of HD was mixed with the monomers (BA and MMA). An aqueous PVA solution and DI water were then added to the monomer mixture and stirred for 10 min to prepare a crude emulsion for 10 min prior to subjecting the system to high shear.

*Miniemulsions stabilized with CA.* A specific amount of CA was mixed with the PVA solution and DI water and then stirred for 2 h at 70 °C. After cooling, undissolved CA particles were found for the higher amounts of CA (0.833 and 1.744 g). Monomers were added and stirred with a magnetic bar for 24 h to completely dissolve the CA particles and to obtain a good crude emulsion. The crude emulsions with HD or CA were sonified using a Branson Sonifier (model 450) at a 70% duty cycle and a power setting of 8 for 10 min accompanied by continuous magnetic stirring in an ice bath. All miniemulsion polymerizations were performed in a 500 ml four-neck flask equipped with a reflux condenser, nitrogen gas inlet tube, and Teflon stirrer (-200 rpm) for 24 h at 60°C (page 5575).

With regard to the limitations of claims 14-24, Kim does not disclose the use of an iron compound.

Tanimoto discloses that an iron compound is further added to the system (abstract) in the amount of from 1 to 50 ppm, which is exactly within the claimed range (page 3, [0017], [0018]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the iron compound in the claimed amount, as taught by Tanimoto in Kim's method for producing the (meth) acrylic resin

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emulsion in order to achieve a good control of the polymerization (page 3, [0017], [0018]), and thus to arrive at the subject matter of instant claims 14-24.

With regard to the limitations of claims 25 and 29, Kim discloses a (meth)acrylic resin emulsion and a method for producing of (meth)acrylic resin emulsion. The emulsion consists of n-butyl acrylate and **methyl methacrylate** (50/50 wt %) employing

With regard to the limitations of claim 27, Kim discloses that the poly(vinyl alcohol) (PVA) has a degree of hydrolysis (DH) (or a degree of saponification) 87-89%, and a degree of polymerization (DP = 500), which are clearly within the claimed ranges (p. 5574, the right column, Experimental Section).

With regard to the limitations of claim 30, it is noted that the limitation "in an amount of at most 20% by weight" also includes 0 wt. % because these reacted monomer units are optional.

### ***Response to Arguments***

7. Applicant's arguments filed on December 29, 2010 have been fully considered but they are not persuasive.

8. It appears that the focal Applicants argument resides in the contention that there is no disclosure in suggestion in Kim that the 1,2-glycol bond content is "a variable which achieves a recognized result.", and there is no disclosure or suggestion in Kim of changing the 1,2-glycol bond content of a PVA, because Kim discloses one PVA (Poval 205) and contains no disclosure that changing such 1,2-glycol bond content would have

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any recognizable result on the emulsions does not suggest the presently claimed emulsions (page 8).

9. It is noted that detailed response for Applicants argument is given in paragraph 6 of current Office Action.

10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that in the emulsion evaluation (where the emulsion is applied to a substrate and dried to result in a film), the film resulting from the emulsion of Example 11 had a higher film strength and a higher resistance to swelling than the film derived from Example 2 (page 8, 2<sup>nd</sup> paragraph)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

11. In response to applicant's argument regarding the 35 USC § 103(a) rejection of claims 14-24 in view of Kim and JP 2002-308939 ("JP '939") (pages 9-11), it is noted that this rejection has been withdrawn.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within



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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL M. BERNSHTEYN whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael M. Bernshteyn/  
Examiner, Art Unit 1762

/M. M. B./  
Examiner, Art Unit 1762